

WHAT IS CLAIMED

1. Ball screw actuator for aircraft control surfaces, comprising:

a lead screw having a thread;

5 motor means to set the screw in rotation about its own longitudinal axis;

a primary body connected to a control surface and engaged on the lead screw by means of a plurality of balls movable on the thread of said screw;

a secondary body connected to the primary body and having an auxiliary portion provided with an engagement surface facing the thread of the control screw at a
10 predetermined distance; the engagement surface being shaped to engage the thread of said lead screw;

characterized in that it further comprises means for de-coupling the secondary body from the auxiliary portion in the rotation motion about the longitudinal axis radially interposed between said secondary body and said auxiliary portion.

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2. An actuator as claimed in claim 1, wherein the means for de-coupling the secondary body from the auxiliary portion comprising at least a weakened portion for connecting the secondary body and said auxiliary portion.

20 3. An actuator as claimed in claims 1 or 2, wherein the means to de-couple the secondary body from the auxiliary portion comprise friction reducing means radially interposed between said secondary body and said auxiliary portion.

4. An actuator as claimed in claim 1, wherein the auxiliary portion has a tubular shape
25 coaxial to the lead screw.

5. An actuator as claimed in claim 4, wherein the engagement surface of the auxiliary portion with tubular shape internally has an inverse thread adapted to engage the thread of the lead screw.

5 6. An actuator as claimed in claim 2, wherein the weakened connecting portion is a pin inserted in the auxiliary portion and in the secondary body.

7. An actuator as claimed in claim 3, wherein the friction reducing means have at least a bearing.

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8. An actuator as claimed in claim 1, wherein the secondary body coaxially surrounds the auxiliary portion.

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9. An actuator as claimed in claim 8, wherein the friction reducing means have at least a bearing interposed between the secondary body and the auxiliary portion.

10. An actuator as claimed in claim 8, wherein the friction reducing means have two bearings set side by side and interposed between the secondary body and the auxiliary portion.

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11. An actuator as claimed in claim 8, wherein the weakened connecting portion is a pin inserted in the secondary body and in the auxiliary portion.

12. An actuator as claimed in claim 8, wherein the secondary body has:

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a first tubular body radially distanced from the auxiliary portion, to define a containment chamber for at least a bearing defining said friction reducing means;

a second tubular body coaxial and integral with the first and radially approached to the auxiliary portion.

13. An actuator as claimed in claim 12, wherein the weakened connecting portion is a
5 pin inserted into the second tubular body of the secondary body and into the auxiliary portion.

14. An actuator as claimed in claim 1, wherein at least the engagement surface of said auxiliary portion is made of material with high friction coefficient.

10 15. An actuator as claimed in claim 1 wherein at least the engagement surface of said auxiliary portion is made of frictionless material.

16. An actuator as claimed in claim 1, wherein the primary body is directly connected to
15 the secondary body.

17. An actuator as claimed in claim 16, wherein the secondary body is connected to the primary body about an axis orthogonal to the longitudinal axis of the lead screw.

20 18. An actuator as claimed in claim 1, wherein the primary body forms a single body with the secondary body.

19. An actuator as claimed in claim 1, wherein the secondary body is directly connected
25 to the control surface.